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RELATING TO

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INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

No. CCXLI.

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Price ONE SHILLING.

List of New and Rare Spiders captured in 1861; *being a Supplement to the Lists in Zool.* 6493, 6862, 7553. By the Rev. O. Pickard-Cambridge, M.A.

The effect of the cold, wet season of 1860 was very visible in the scanty crop of spiders during the spring of 1861. Though, however, the *quantity* was short, the *quality* was good, and the result of the season's work was nearly equal to that of the previous year (1860). By the month of September, the summer having been a tolerably genial one, spiders appeared in most places to have regained their ordinary numbers; in fact I hardly ever saw a greater abundance of some of our commoner species than during last autumn; such, for instance, as Epëira solers, E. inclinata, and Linyphia montana, whose webs on a dewy September or October morning show so conspicuously among the heath and furze. The following list comprises, among other rare spiders, *ten* species discovered or ascertained, during the past season, as new to Science; *seven* species recorded for the first time as inhabitants of Great Britain; *three* others of which only one sex had been previously discovered; and nineteen species known to me as British, but which until this last season I had never met with myself.

Family Salticidæ.

*Salticus floricola, *Koch.* I met with this pretty little Salticus in tolerable numbers on dry sandy patches on Bloxworth Heath, about the middle of May, 1861: both sexes were adult. Previously only two specimens had been captured in England, and those were taken on the sand-hills at Southport, Lancashire, in 1859. The activity of this little spider surpassed everything I have yet observed. Although in length it does not exceed one-tenth of an inch, many of its leaps were more than eight inches in extent.

*S. nidicolens, *Walck.* Not infrequent in the same places as S. floricola.

*S. quinque-partitus, *Walck.* Of this rare Salticus I captured two adult males in the same locality as the two last.

S. fasciatus, *Walck.* I received an adult female of this very distinct and well-marked Salticus (now recorded for the first time as British) from Mr. William Farren, of Cambridge, who captured it on a gate near Brockenhurst, in the New Forest, in June, 1861. I am also indebted to Mr. Farren for several other rare spiders captured in the same locality.

*S. reticulatus, *Blackw.* Rare; at heath-roots and under pieces of wood and stone, and among moss in woods at Bloxworth, Dorset; also under stones at Portland, and on Arthur's Seat, Edinburgh, in July, 1861.

*S. tardigradus, *Walck.* Being at Calke, near Derby, at the beginning of August, I searched some palings where, in April, 1860, I had captured a very young specimen, and was pleased to find adults of both sexes of this fine large Salticus in tolerable abundance.]

Family THOMISIDÆ.

*Thomisus floricolens, *Walck.* Adult males on iron railings, Bloxworth, in May.

T. morio, *Koch.* An adult male of this species, now recorded for the first time as British, was captured on Bloxworth Heath, by myself, in 1857; but it was mistaken, until lately, for T. luctuosus, from which, however, it differs very remarkably, especially in the form of the palpi.

*T. Cambridgii, *Blackwall.* The female only of this species has been as yet recorded; but on an examination of some adult males of T. bifasciatus, I found among them an adult male of this fine species, which was captured by myself some time back, on Bloxworth Heath.

T. versutus, *Blackw.* An adult male, captured on Bloxworth Heath, in May, 1861.

T. trux, *Blackw.* Immature specimens swept off flowers in woods, in September, 1861, at Bloxworth.

T. incertus, *Blackw.* Adult females at the roots of trees, Bloxworth, in May; and adult males among dead leaves and rubbish in a plantation at Drayton-Beauchamp, Bucks, in August, 1861.

T. simplex, *Cambridge.* I discovered this very distinct new species at the base of large trees on the lawn at Bloxworth Rectory; the males were adult in May, and the females in June, 1861.

*T. lanio, *Koch.* Adults of both sexes beaten frequently from underwood at Bloxworth, in May and June.

*Philodromus pallidus, *Walck.* Adult males of this species were beaten by myself and Mr. Tuffen West, off Scotch firs near Bloxworth, in May, 1861.

*P. elegans, *Blackw.* An immature male was sent me, among other spiders from Shirley Heath, by Dr. Knaggs, M.D. The only locality in which this species has been met with before, is that in which I discovered it, near Lyndhurst, New Forest, in 1858.

Family DRASSIDÆ.

Clubiona assimilata, *Camb.* New to Science. Among specimens of C. amarantha captured at Bloxworth and Southport I found an adult male of this species (taken, I believe, at Southport), and received another from the Rev. T. W. Huthwaite, taken at Coven, Staffordshire. Since preparing a description of it I have found adult males of this same species, included under the name "amarantha," in the collection of Mr. Meade, of Bradford, Yorkshire.

C. neglecta, *Camb.* New to Science. This species was also mistaken for C. amarantha, to which, like the last, it bears a strong general resemblance; it (an adult male) was captured at Bloxworth.

C. deinognatha, *Camb.* New to Science. An adult male of this very distinct Clubiona was captured at Bloxworth several years ago, but was overlooked among a large number of specimens of C. amarantha, from which the large size of the falces at once distinguishes it.

C. diversa, *Camb.* New to Science. An adult male of this minute Clubiona was received from Mr. C. H. Brown, who captured it at Southport, Lancashire, in June.

C. trivialis, *Koch.* Adult males and females of this species (now first recorded as British) have been captured by myself at Southport, Lancashire; Hursley and Lyndhurst, Hampshire; and at Bloxworth, on furze-bushes and among heath. Mr. Blackwall tells me he finds females of this species in his collection, that he met with in similar situations, some years ago, in North Wales. I also captured it on the Pentland Hills, Scotland, in July last.

Family CINIFLONIDÆ.

Ergatis arborea, *Camb.* New to Science. Adults of both sexes of this spider were captured by myself in May, 1860, at Hursley and Lyndhurst, and subsequently at Bloxworth. It is closely allied to E. benigna, but is smaller, different in the structure of the palpi, and in its habitat.

Family AGELENIDÆ.

*Agelena subfusca, *Camb.* I have found, occasionally, adult males of this species on walls and posts at Bloxworth, apparently intercepted while on an aërial excursion. The female has hitherto escaped notice.

Tegenaria silvicola, *Walck.* I found an adult female, and many immature specimens of both sexes, under moss and loose stones on walls, at the foot of the Pentland Hills, in June.

Family THERIDIIDÆ.

Theridion tinctum, *Walck.* I met with both sexes of this species, adult and in considerable numbers, on furze-bushes at Hursley, in May, 1860. It has not before been recorded as British.

T. projectum, *Camb.* New to Science. An adult male, and females adult and immature, of this minute but very distinct species, were found by myself at the roots of heath, Bloxworth, in April and May.

*T. angulatum, *Blackw.* Among spiders kindly collected for me at Folkestone last summer, by Dr. Knaggs, M.D., I found an adult male of this remarkable species, which I had met with before at Hursley, and in some abundance on Bloxworth Heath, though nearly all immature.

Family LINYPHIIDÆ.

Linyphia triangularis, *Walck.* I met with adult females of this spider in corners and crevices of rocks on the banks of Loch Katrine, in July last.

L. longidens, *Wider.* At heath-roots, Bloxworth; under stones between Loch Katrine and Inversnaid, and also received from Hursley from the Rev. S. M. Scroggs.

*L. frenata, *Wider.* Adults of both sexes in abundance among low plants in plantations at Drayton-Beauchamp, Buckinghamshire, in August.

L. obscura, *Blackw.* The female of this species has not before been recorded. Adults of this sex, and immature males, were captured by myself at Wychwood Forest, Oxfordshire, and on the Pentland Hills, in June; and at Hursley and Bloxworth, in August and September last. Mr. Meade also met with both sexes, adult, in Ireland, in June last.

L. circumspecta, *Blackw.* Adults of both sexes among grass at Formby, Lancashire, in June, 1859.

L. flavipes, *Blackw.* Adults of both sexes at heath-roots, Bloxworth, in May.

Neriene corticea, *Camb.* New to Science. Adults of both sexes among moss and rugged bark of ash and apple trees at Bloxworth, in May and October last.

N. elevata, *Camb.* New to Science. Adults of both sexes were discovered in 1859, under sea-weed and at the roots of grass and dwarf willows, on the sand-hills, Southport.

N. vagans, *Blackw.* Adult males were captured at heath-roots, Bloxworth, in May last; and one at the foot of Ben Nevis, in Inverness-shire, in July.

*N. affinis, *Blackw.* Both sexes, adult, at heath-roots, Bloxworth, in May last.

N. pygmæa, *Blackw.* An adult male and female were contained among other spiders kindly collected for me in Ross-shire last September, by the Rev. J. F. Montgomery, of Edinburgh.

N. flavipes, *Blackw.* Adult males and females on bare ground, door-steps, &c., at Bloxworth; and at Dalswinton, in Dumfriesshire, in July.

N. bituberculata, *Wider.* Adults of both sexes (now recorded for the first time as British) were discovered by myself at roots of heath, Bloxworth, in May.

*N. nigra, *Blackw.* Adults of both sexes on iron railings, Bloxworth, in November.

N. herbigrada, *Blackw.* An adult male and female were captured by myself under a rooty ledge on the banks of the Conway, N. Wales, in April, 1860.

*Walckenäera unicornis, *Camb.* Males and females, adult, on furze-bushes, Bloxworth, in May.

W. bicolor, *Blackw.* An adult male, under a stone on Arthur's Seat, Edinburgh, in June.

W. borealis, *Camb.* New to Science. Adult males under loose stones on a wall near the Pentland Hills, in June.

*W. humilis, *Blackw.* Not infrequent, running in sunshine, on the pavements of Edinburgh, at the end of June.

W. cristata, *Blackw.* Adults of both sexes among lichens on apple trees, Bloxworth, in October.

W. antica, *Wider.* Adults of both sexes at the base of trees, among roots and grass, in April, 1861, and at heath-roots, Bloxworth, in the first week in February, 1862.

W. nemoralis, *Blackw.* Adults of both sexes not infrequent among lichens on apple trees, Bloxworth, in October and November.

W. pratensis, *Blackw.* Both sexes, adult (now recorded for the first time), under ledges of the banks of the Conway, North Wales, in April, 1860.

*Pachygnatha Listeri, *Sundevall.* Adults of both sexes numerous among low herbage in woods, Bloxworth, in September, 1861. I had never met with but one solitary specimen until this last season, when it appeared so abundantly.

*P. Clerckii, *Sund.* Adult males at Bloxworth, in company with P. Listeri.

Family EPEIRIDÆ.

Epëira lutea, *Koch*. I discovered adult females of this fine Epëira (now first recorded as British), among low plants in plantations at Drayton-Beauchamp, Bucks, in August last.

E. sericata, *Koch*. In September, 1858, I met with two adult males on the city wall at Chester; Mr. Blackwall has only lately ascertained them to be of this species. It is now recorded for the first time as British.

*E. bella, *Meade*. Adult males (the male adult hitherto unknown) of this very pretty species were captured by myself, together with adult females, among low plants at Drayton-Beauchamp, in company with E. lutea.

*E. calva, *Blackw*. Abundant among rough grass on the Downs, Hursley, in August.

In giving the above simple and unscientific list, I must repeat again here that my sole object has been to draw the attentoin of the "collector" to the subject of spiders. I have tried to show that, looked upon not only as objects of great interest, both in variety of form, colour and habits, but looked upon merely as an object "to collect," spiders offer a far more fertile field than most orders of insects. It would be difficult to name any order of insects to our indigenous lists of which upwards of sixty species might be added, as the result of a limited amount of leisure bestowed on them during eight years! One great recommendation to the study of spiders is, that but little or no time is required for mounting or preserving them, and this, to the collector who has but little leisure to devote to his hobby indoors, is a very great point. Another recommendation is, that all the parts on the structure of which, generic and other characters are based, are easily observed and examined, either through the spirit in the tubes or else out of them, the spirit having been allowed to evaporate, a process which a few minutes will complete. But in spite of all that has been or can be said, there seems to be a kind of general aversion to a spider, and with numbers of persons a sort of creeping against handling them. I have found this the case even with collectors who would not scruple to dive down into a putrid mass to capture a beetle. How long this will be the case seems doubtful; certainly the converts to Arachnology are as yet few and far between, while to some other branches of Entomology recruits are numbered almost by scores. Perhaps when the Ray Society has completed the publication of Mr.

Blackwall's work on 'British Spiders,' Arachnology will obtain her share of students. No doubt the want of a work on the subject in "the mother tongue" is, among others, one chief hindrance to the study.

The asterisk affixed to the name of any spider in the above list denotes that some notice of such spider has been given in one of the previous lists (see Zool. 6493, &c.).

O. Pickard-Cambridge.

Bloxworth, Dorset,
February 15, 1862.

Descriptions of Ten New Species of British Spiders.

By the Rev. O. Pickard-Cambridge, M.A.

Tribe Octonoculina. Family Thomisidæ.

Thomisus simplex.

General colour pale murky yellowish brown. Cephalothorax mottled and marked on the sides and front with brownish black. Abdomen marked on the upper side with several transverse dark streaks on the hinder half, and a longitudinal fusiform band, bordered with a fine blackish line, reaches nearly two-thirds of the length towards the spinners. In adult males the femoral joints of the legs and the palpi, except the humeral joint, suffused with dark sooty brown. Radial joint of the palpi has a strong projection on the outer side, ending with a long, nearly straight, fine, pointed, black spine, which runs alongside of the digital joint.

Adult male. Length, 1-eighth of an inch; length of cephalothorax, 1-sixteenth. Breadth, 1-sixteenth. Relative length of legs, 2, 1, 4, 3.

Cephalothorax compressed in front, abruptly depressed behind, thinly clothed with short hairs, and some bristles project from the frontal margin. Its colour is pale yellowish brown, in strongly marked males tinged with reddish brown, especially towards the front, and in such specimens the pointed spade-shaped mark so characteristic of the genus is distinctly visible, and contains generally two longitudinal parallel spots of dark brownish black, with which colour the sides and the region of the eyes are more more or less mottled and marked.

Eyes in two almost concentric, curved rows, the front row being the shortest, the curves directed forwards. The lateral eyes of the front row are the largest of the eight, though but very little larger than the corresponding ones of the hinder row.

Legs furnished with hairs and spines; two parallel rows of the latter extend along the under side of the tibiæ and metatarsi of the first and second pairs. Colour pale yellowish brown, with the femoral joints, in most specimens of adult males, more or less suffused with brownish black. Relative length, 2, 1, 4, 3.

Palpi short. Colour yellowish brown, and, excepting the humeral joint, suffused with brownish black. The radial joint has a large crescent-shaped projection on its under side, and on its outer side a strong one, ending in a long, fine, pointed, nearly straight, black spine, which projects along the side of the digital joint. This last joint is oval; the palpal organs contained in it are well developed, prominent, and with a filiform black spine, curved from their base round the inner side to their extremity, and so down the outer side.

Falces in most specimens slightly darker coloured than the maxillæ, labium and sternum, which are of a pale yellowish brown, the latter obscurely freckled with brown. None of these parts offer any variation from the generic type.

Abdomen of a dull yellow-brown colour, thinly clothed with short dark hairs. The upper side is obscurely freckled with brown, and in some specimens the margins, especially near the cephalothorax, mottled with whitish. Two fine dark lines commencing near the cephalothorax join in an acute angle at rather more than halfway to the spinners, forming a longish fusiform band; in strongly marked specimens this band is rather darker coloured than the rest. On the hinder half of the abdomen are several transverse dark lines; the first interrupted by the fusiform band, the rest at regular intervals towards the spinners. These lines and the fusiform band are obsolete in some specimens, and variously defined, from a mere spot or two to perfect lines in others. The under part and sides are spotted and streaked with dark brown, in various degrees of depth and distinctness in different specimens. The branchial opercula are reddish brown. The five depressed dots on the front half of the upper side of the abdomen, so characteristic of the genus Thomisus, are also plainly marked in this species.

The female is lighter coloured than the male, and almost entirely unicolorous; the characteristic markings generally visible in the male being in most females obsolete. The sexual organs, which are fully developed at the end of May and beginning of June, are reddish brown.

I captured adult males of this species at the end of April, 1861, at the bases of large trees on the lawn of Bloxworth Rectory, Dorset. Its habitat appears to be in the crevices where the turf and the trunk of the tree meet, among bits of dead bark, leaves and grass. The male is rather more active than many species of Thomisi, but the female is very sluggish. I found in the same places females adult throughout the summer, and immature specimens of both sexes in November. This species is closely allied to Thomisus trux, but may readily be distinguished, not only by its colour and markings, but especially by the long, pointed, nearly straight, black spine issuing from the outer projection on the radial joint of the palpi.

Family DRASSIDÆ.

CLUBIONA ASSIMILATA.

Cephalothorax dull yellow, tinged in front with red, behind with green. Abdomen red-brown, thickly freckled with minute paler spots and thinly clothed with hoary hairs. A dark red-brown fusiform band, palest down the middle, reaches a third of the length from the cephalothorax; this band has two oblique, oval, yellowish red spots on each side, and is followed towards the spinners by some obscure, pale, transverse, curved lines. Eyes very nearly equal in size, and those of the front row equidistant from each other. Digital joint of palpi of moderate size. Palpal organs simple in structure, but well developed; they have a strong spine curving obliquely over them, from their base on the outer side over to the inner side, thence underneath and round their extremity, coming up and projecting on the outer side again. In contact with the point of this spine is some semi-transparent membrane.

Adult male. Length, 1-fifth of an inch. Length of cephalothorax, 1-tenth. Breadth, 1-twelfth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax oval, slightly compressed laterally in front; frontal margin curved, and but very slightly depressed from the centre to the eyes; it has a narrow indentation in the medial line. Colour dull yellow, with a red tinge in front and a green tinge behind.

Eyes very nearly equal in size, placed on black spots in two transverse rows on the front of the cephalothorax. The front row is immediately above the frontal margin, and the eyes composing it are equidistant from each other, while in the hinder row the two central eyes are a little wider apart than the two end ones on either side. The central eyes of the front row are the darkest of the eight.

Legs furnished with hairs and brownish black sessile spines. The first and second pairs are of equal length, and their relative length is 4, 1, 2, 3. Their colour is dull yellow, and each tarsus ends with two curved pectinated claws, below which is a small scopula.

Palpi same colour as the legs. Radial joint rather shorter than the cubital, and has a dark brown crescent-shaped projection at its extremity on the outer side. The outer limb of the crescent is very much longer, stronger and darker than the inner one. Digital joint of moderate size, oval, rather broader at the end than near the radial joint. Palpal organs highly developed, but of simple structure. They have a strong corneous spine connected with them. This spine issues from the outer side near the radial joint, passes obliquely over to the inner side, and so underneath and round their extremity, coming up again on the outer side, and ending in a sharp prominent point, in contact with which is some semi-transparent membrane. The colour of these organs and the spine connected with them is dark red-brown.

Falces long, very prominent, subcylindrical, slightly hollowed on the inner side, especially towards the ends.

Labium oblong, slightly prominent at the top, where it is broader than at the bottom. This and the falces are of a dark brown colour, tinged with red, the top of the labium being slightly paler.

Maxillæ long, straight, convex at the base, enlarged and rounded at the ends, and of a reddish yellow colour.

Sternum oval, with eminences on the sides, opposite the legs. Colour dull yellow.

Abdomen oblong-oviform in shape, thinly clothed with hoary hairs. Colour red-brown, thickly freckled with minute spots of a paler hue. On the upper side a dark red-brown fusiform band, palest in the medial line, begins at the end near the cephalothorax, and runs about a third of the length towards the spinners. On each side of this band are two oblique yellowish red oval spots, and between it and the spinners is a series of indistinct, slightly curved, transverse, yellowish red lines. The under part is paler than the upper, and has four or five longitudinal yellowish lines converging slightly towards the spinners, which project considerably and are yellow tinged with brown. Branchial opercula pale yellow.

This species was captured by myself at Southport, Lancashire, in 1859, but was mistaken for Clubiona amarantha until the examination of another specimen, captured by the Rev. T. W. Huthwaite at Coven, near Wolverhampton, in July, 1861, proved its distinctness from that species. Since writing the above I have received specimens of this species from Mr. Meade, of Bradford, who had also overlooked its distinctness from C. amarantha, for which it may easily be mistaken, unless the palpal organs are carefully examined, when the strong spine that envelopes the palpal organs will readily distinguish it. It differs also from C. amarantha in several other points.

CLUBIONA NEGLECTA.

Cephalothorax dull brownish yellow. Abdomen red-brown, thickly freckled with small yellowish spots, and thinly clothed with grayish hairs; a narrow, dark brown, fusiform band, divided longitudinally by a yellowish red line, runs about one-third of the length towards the spinners; near the point of this band, on either side, is an oblique line; between it and the spinners are two transverse angular ones and several short curved ones, all of an obscure yellowish colour. Radial joint of palpi has at its extremity on the outer side a dark brown crescent-shaped projection, of which the upper limb is the stoutest and darkest. Digital joint large, and of an obtuse oval shape, enlarged at the extremity. A long filiform spine springs from the inner side of the palpal organs, curves round their extremity on the edge of the digital joint, and, running down the edge on the outer side, curves back over the middle, ending in a fine prominent point towards the inner side.

Adult male. Length, 1-fifth of an inch. Length of cephalothorax, 1-tenth. Breadth, 1-sixteenth. Relative length of legs, 4, 2, 1, 3.

Cephalothorax of a longish oval shape, considerably depressed in front; frontal margin curved; a slight narrow indentation in the medial line. Colour dull brownish yellow.

Eyes in two transverse rows on the front of the cephalothorax, more unequal in size than in C. assimilata, the intermediate ones of the front row being the largest and darkest of the eight. All the eyes are on black spots.

Legs provided with hairs and dark brown sessile spines. Relative length, 4, 2, 1, 3. Each tarsus ends with two curved pectinated claws, below which is a small scopula. Colour similar to that of the cephalothorax.

Palpi similar to the legs in colour, except the digital joint, which is brownish. Radial rather shorter than the cubital joint, and has a dark brown crescent-shaped projection at its end on the outer side; the limbs of this projection are short, but the upper one is much the stoutest and darkest. Digital joint large, and of an obtuse-ended oval shape. Palpal organs highly developed, prominent, and moderately complex in structure; a long filiform spine is connected with them; it issues from the inner side, curves round their extremity on the edge of the digital joint, and, running down that edge on the outer side, curves back up the middle, ending in a fine projecting point, curved towards the most prominent part of the palpal organs. These organs are of a dark reddish brown colour.

Falces moderate in length, conical, and rather projecting. Colour dark red-brown.

Maxillæ straight, convex at the base, enlarged and rounded at the top.

Labium oval, notched at the top, which with the maxillæ are rather paler coloured than the falces.

Sternum oval, with eminences on the sides opposite to the legs. Colour dull brownish yellow, slightly darker on the margin.

Abdomen narrow, oval in shape. Colour red-brown, thickly freckled with small yellowish spots, somewhat regularly arranged, especially on the sides, and thinly clothed with grayish hairs. The upper side has a longitudinal, dark brown, narrow, fusiform band for about a third of its length, ending in a point; an obscure yellowish red line runs down the middle of this band, which has an oblique line near its point on each side, followed towards the spinners by two transverse angular lines and several short very slightly curved ones; all these lines are pale and obscure. The extremity of the abdomen close to the base of the spinners is encircled by a deep red-brown ring, outside of which is a broader one of pale yellow. The under side is slightly paler than the upper, and has four fine pale-coloured longitudinal lines meeting at the spinners. Branchial opercula pale yellow.

This species was taken by myself at Bloxworth, Dorset, but was for some time confounded with C. amarantha, from which it differs in many minor points, but especially in the palpal organs and the long filiform spine connected with them. It is also very nearly allied to C. assimilata (last described), but the differences in the palpi will, on a close inspection, readily distinguish it, as will also several other minor differences, such as the top of the labium, the eyes and the length of the falces. But without a close comparison these two species, and several others nearly allied in size and general appearance, may easily be mistaken for each other, and it requires a very practised eye to distinguish them readily.

CLUBIONA DEINOGNATHA..

Cephalothorax very broad; almost without lateral compression forwards. Colour dull yellow, tinged with reddish brown towards the eyes. Central eyes of front row nearest together and slightly the largest; lateral eyes of hinder row slightly the smallest of the eight. Abdomen red-brown, with a broad, long, wedge-shaped band on the upper side. Palpi short, slight. Radial joint with a small crescent-shaped projection on outer side. Digital joint small, with a small slender black spine towards its extremity, issuing from its inner edge. Palpal organs simple, with a strong corneous red-brown curved spine issuing from their extremity on the inner side, curving slightly downwards and outwards, and so round just below the outer margin of the digital joint, ending near its base. Falces very powerful, long, prominent and arched, of a deep rich red-brown colour. Labium slightly notched at the top.

Adult male. Length, 1-fourth of an inch. Length of cephalothorax, 1-seventh. Breadth, 1-eighth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax broad in proportion to its length, and with little or no compression on the sides forwards, and very slightly depressed from its highest point to the eyes. Frontal margin nearly straight. Colour dull yellow, with a red-brown tinge towards the eyes. A slight narrow indentation in the medial line.

Eyes nearly equal in size. The two middle ones of the front row are the closest together and rather the largest and darkest of the eight, while the end ones of the hinder row are slightly the smallest, and are each rather nearer the centre one on its side than the centre ones are to each other.

Legs moderately long and stout, very sparingly furnished with hairs and a few black sessile spines. Each tarsus ends with two curved pectinated claws, below which is a small scopula. Colour pale dull yellow, with a small reddish mark or two at the joints.

Palpi short and slight. The cubital joint has a small red-brown projection at its end on the under side. Radial joint shorter than the cubital, and has a small crescent-shaped projection on the outer side, the upper limb of which is rather the smallest and shortest; this projection is edged and tipped with dark reddish brown. Digital joint small, oblong-oval, with a minute slender black spine towards its extremity, issuing among the hairs from its inner margin. Palpal organs neither complex nor highly developed; they have a corneous red-brown spine issuing from their extremity on the inner side, curving slightly downwards and outwards, and so round just below the outer margin of the digital joint, ending near its base. The colour of these organs is brown, tinged with red.

Falces very powerful, long, prominent and convex; when looked at in profile they describe an arc of a circle. They are slightly hollowed on the inner side toward the extremity, and are of a rich deep red-brown colour.

Maxillæ straight, enlarged and rounded at the extremity on the outer side, abruptly sloping on the inner side to the labium.

Labium broad, enlarged at the top, which is slightly hollowed or notched. This and the maxillæ are dark brown, paler at the top.

Sternum heart-shaped, with eminences on the sides opposite the legs. Colour dull yellow, with a fine broken edging of reddish.

Abdomen long, oviform, but rather shorter than the cephalothorax, of a red-brown colour, paler on the under side, and sparingly clothed with short pale yellowish hairs. It has on the upper side a large wedge-shaped band; at its commencement at the upper end nearly as wide as the abdomen. This band extends about two-thirds of the length towards the spinners, and its edges are boldly but irregularly dentated; it is most visible, like all the markings of most of the allied species, when in spirits of wine. The plates of the spiracles are pale dull yellow.

An adult male of this very distinct Clubiona was captured by myself some time ago at Bloxworth, Dorset, but was mistaken for C. holosericea. Although in general colouring it resembles several of the allied species, yet the more massive cephalothorax and falces, with the comparatively short and feeble palpi, give it an appearance at once striking and distinctive.

CLUBIONA DIVERSA.

Cephalothorax pale dull straw-colour. Abdomen brightish yellow, mottled chiefly in the medial line and towards the spinners with brownish red, and with some obscure slightly curved transverse pale lines on the hinder part, and some oblique indistinct spots on the front part. Radial joint of palpi has a longish pointed projection on the outer side, of a dark reddish brown colour. Palpal organs prominent, but not complex. A strong sharply curved corneous spine issues from their extremity on the inner side, the fine point of which projects over the end on the outer side, and has a small semitransparent protuberance in contact with it. The eyes are almost of equal size and are all dark-coloured; those of the front row, with the lateral ones of the hinder row, form an exact arc of a circle and are equidistant from each other.

Adult male. Length, 1-ninth of an inch. Length of cephalothorax, 1-nineteenth. Breadth, 1-twentieth. Relative length of legs, 4, 2, 1, 3.

Cephalothorax very slightly compressed on the sides before, abruptly depressed behind; and from the summit depressed continuously in a curved line to the frontal margin, which is rounded. Colour pale dull straw.

Eyes very nearly equal in size, seated on black spots, and all dark-coloured. Six of them describe an exact arc of a circle, and are equidistant from each other.

Legs long, furnished with a few hairs and black sessile spines, and dull straw-coloured. Relative length, 4, 2, 1, 3.

Palpi same colour as the legs and cephalothorax, except the digital joint, which is dark brown. Cubital joint bent inwards, and has a minute red-brown projection at its extremity on the inner side. Radial joint has a longish pointed projection at the end, on the outer side, of a deep reddish brown colour. Palpal organs highly developed and prominent, but not very complex in structure. From their extremity on the inner side a strong corneous red-brown spine curves sharply round towards the outer side, and has its sharp prominent point in contact with a small semitransparent protuberance. The surface of the basal half of the palpal organs is marked with a sinuous, dark, well-defined line.

Falces of moderate size, straight and hollowed out on the inner sides towards the ends. Colour dull yellow, slightly tinged with light reddish brown.

Maxillæ long, straight, much enlarged, and rounded at the top, same colour as the falces.

Labium broad, slightly enlarged and rounded at the top, slightly darker coloured than the maxillæ.

Sternum oval, and same colour as the cephalothorax.

Abdomen oviform, longer than the cephalothorax, of a brightish yellow, mottled on the upper side, chiefly in the medial line and towards the spinners, with bright brownish red. On the upper half are some indistinct pale oblique spots on either side of the medial line, followed by some obscure transverse slightly curved lines, of a pale yellow edged with reddish. Spinners not very prominent, and of a dull yellow colour.

I obtained the specimen above described from Mr. C. H. Brown, of Southport, Lancashire, by whom it was captured on the sand-hills near the town, in June, 1861. It is closely allied to Clubiona trivialis, *Koch*, for which I at first mistook it, but it may readily be distinguished by its smaller size, brighter colours, and the difference in the shape of the projection at the end of the radial joint. This projection in C. trivialis is spatular-shaped and concave inside, while in C. diversa it is pointed.

Family CINIFLONIDÆ.

ERGATIS ARBOREA.

Cephalothorax reddish brown, very elevated towards the front, where it is clothed with coarse white hairs. Four central eyes form a square. The side pairs placed obliquely on a small tubercle. Abdomen yellow-brown, with an oblong dark brown band on the upper side, succeeded towards the spinners by several transverse curved bars of the same colour; these bars are generally formed of two lines, with a short oblique line or spot at each end. Palpi short. Humeral joint gouty. Radial joint with a long dark-pointed, erect spur at its base, and an obtuse, rounded projection at its extremity. Falces of the male hollowed out on the inner surface, with a large prominence on their under side and a minute one at their base in front towards the outer side.

Adult male. Length, 1-tenth of an inch. Length of cephalothorax, 1-twentieth. Breadth, 1-twenty-fourth. Relative length of legs, 1, 2, 4, 3.

Cephalothorax very convex and elevated in front, slightly depressed from the highest point to the eyes, much depressed behind and also on the sides, where some furrows converge towards the middle. Colour dark brown, tinged with red, darkest behind the elevated part, which, with the frontal margin, is clothed with coarse white hairs.

Eyes nearly equal in size. The four middle ones form a square, and those of each side pair are placed obliquely on a small tubercle.

Legs moderately stout and furnished with hairs. Relative length, 1, 2, 4, 3. The fourth pair has a calamistrum (or combing apparatus) on the upper side of their metatarsi, a peculiarity on which Mr. Blackwall has founded the family Ciniflonidæ. Each tarsus ends with three claws; the two upper ones curved and pectinated and the lower one inflected near its base. The colour of the legs is a pale yellow-brown.

Palpi short and strong, of the same colour as the legs. Humeral joint gouty at the end on the outer side. Cubital joint strong, convex on its upper surface and strongly curved inwards. Radial joint longer than the cubital and has two projections, one (which is a leading characteristic of the species) in the form of a long stoutish, pointed spur, tipped with dark brown, springing at right angles from the upper side of its extremity; the other, an obtuse rounded one, is at the extremity on the outer side. The digital joint is dark brown, pointed at the end. Palpal organs highly developed, with a strong process curved from their extremity round the outer side, and ending in a kind of twisted or spiral point, which reaches to the articulation of the radial with the cubital joint.

Falces yellow-brown, long, with a large prominence on the under side and a minute one at their base in front towards the outer side; they are curved a little forwards at the ends and hollowed out about the middle of their inner surface, leaving the ends very prominent.

Maxillæ similar in colour to the falces, convex at the base, rounded at the ends, which are more abruptly curved on the inner than on the outer side. They are inclined towards the labium.

Labium yellow-brown, with the base dark brown. Its shape is triangular, rounded off at top.

Sternum heart-shaped, thinly clothed with coarse white hairs, and of a dark brown colour.

Abdomen oviform, yellowish brown, with a strong reddish tinge, clothed with short brown and hoary hairs. On the upper side a dark brown oblong band, sometimes slightly pointed at the end, occupies the upper end to rather more than a third of its length; between this band and the spinners are several dark transverse curved bars (in most specimens composed of two fine parallel lines), with an oblique spot or short line at the ends: these bars are more or less strongly marked in different specimens, in some being almost obsolete, in others parts only are visible. The sides of the abdomen are mottled more or less with dark brown. The under side is yellow-brown, with a broad brown band along the middle. Spinners eight in number.

The female is rather paler coloured than the male, but resembles it in markings. Its falces are wanting in the peculiarities described as characteristic of the male.

I discovered this spider in tolerable abundance on trees and bushes in a hedge on Hursley Down, near Winchester, in May, 1860, and since then at Bloxworth, Dorset, and Lyndhurst, Hampshire, in similar situations. Except from its smaller size it might easily be mistaken, on a casual glance, for its ally Ergatis benigna, but it may readily be distinguished, not only by size, but by the band on the upper side of the abdomen not being dentated on the edges, as in Ergatis benigna, by the bars that succeed the band being curved and not angular, and by the very peculiar spur at the base of the radial joint of the palpi. This spur, though found in E. benigna, is in that species quite rudimentary and very dark-coloured. Moreover, as far as my observations have gone, the habitat of E. benigna is on low plants and very dwarf bushes, while all I have yet found of E. arborea have been beaten from trees and high bushes.

Family THERIDIIDÆ.

THERIDION PROJECTUM.

Colour red-brown. Abdomen with a projecting ridge round the margin. Two central eyes of front row very minute. On each side of these is a group of three others almost contiguous, in the form of an equilateral triangle. The eyes of these two groups are disproportionately large compared to the size of the spider, the two middle ones of the hinder row being the largest. Palpal organs prominent and complex, with a black filiform spine curved from the outer side round their base to the inner side.

Adult male, 1-sixteenth of an inch. Length of cephalothorax, 1-twenty-fourth. Breadth, 1-thirty-second. Relative length of legs, 1, 4, 2, 3.

Cephalothorax small, slight, compressed laterally, but elevated in front, and with a broad shallow indentation in the medial line. Colour red-brown, which is also that of the whole spider.

Eyes very unequal in size, in two transverse curved rows, the two centre ones of the hinder row the largest, and the two centre ones of the front row the smallest and darkest of the eight. They form three groups. The two side groups consist each of three almost contiguous large eyes, in the shape of an equilateral triangle. Between these groups are the two centre eyes of the front row, which are very minute and almost contiguous. The extreme dissimilarity in size between these two eyes and the rest, and their position, is a striking characteristic of the species, and would almost warrant its separation from the genus Theridion.

Legs robust and provided with hairs. Their relative length is 1, 4, 2, 3. The tarsi end with three claws.

Palpi. Radial joint stronger than the cubital, and slightly produced at the extremity on the outer side. Digital joint roundish oval and hairy outside. Palpal organs highly developed and complex in structure, with a black filiform spine curved from their outer side round the base to the inner side.

Falces small, conical and vertical.

Maxillæ obliquely truncated at the ends on the outer sides, and much inclined towards the labium, which is semicircular.

Sternum broad, flat and heart-shaped.

Abdomen considerably elevated towards, and projecting slightly over, the base of the cephalothorax. The upper side is, however, flattish. It is broader behind than in front, and is thinly clothed with hairs. The upper half, from a little below the highest point to the spinners, appears, when looked at from below or in profile, like a shield or case laid over the abdomen, with the edge projecting all round, like the eaves of a house. This is a remarkable feature in the spider, and will probably prove very characteristic of the adult male. The colour of the abdomen is slightly darker than the rest of the spider, the upper part being the darkest. This part, when in spirits of wine, seems to be mottled with paler depressed spots, arranged with some regularity in transverse rows. The female differs from the male only in wanting the projecting edge round the abdomen.

I found an adult male of this very minute but most remarkable Theridion at the roots of heath, at Bloxworth, Dorset, in April, 1861, and shortly after, an adult and three immature females in a similar position on another part of the heath. By the position of the eyes this species seems to be allied to the genus Pholcus, though in general form and appearance it is much more like the true Theridia.

Family LINYPHIIDÆ.

NERIENE CORTICEA.

Cephalothorax blackish brown, with an olive-green tinge; it has a deepish transverse dip or depression about the centre. Abdomen black. Legs and palpi yellowish brown. Eyes of the hind row equal in size and equidistant from each other; end ones of front row largest, and centre ones smallest, of the eight. Radial joint of palpi has a tuft of strong bristly black hairs on its upper side, which is rather protuberant; at its extremity in front is a strong projection or elongation projecting obliquely outwards over the base of the digital joint, and ending in the form of a crescent, of which the limb nearest the tuft of hairs is the shortest and smallest.

Adult male. Length, 1-sixteenth of an inch. Length of cephalothorax, 1-thirty-fifth. Breadth, 1-fortieth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax of a blackish brown colour, tinged with olive-green; margin edged with black; the hinder part slopes very abruptly in a hollowish line, and about halfway between the top of the slope and the eyes is a strong transverse dip or depression, and an indentation in the medial line of the hinder part; a single row of a few long bristly hairs, directed forwards, occupies the medial line, and there are some shorter ones in the region of the eyes.

Eyes, on black spots, in two rows curved away from each other, on the front of the cephalothorax; the front row is the most curved, and rather the shortest; the eyes of the hinder row are of the same size, and at equal distances from each other; the central ones of the front row are the smallest, and the end ones the largest of the eight, and each of these last is further from the central one on its side than the central ones are from each other. The side pairs of eyes are seated on a tubercle, but not placed very obliquely.

Legs moderate in length, clothed with hairs, and of a pale yellowish brown colour; the margins of the joints slightly edged with dark brown, and occasionally there is a tinge of red, especially on the tarsal and metatarsal joints. Relative length, 4, 1, 2, 3.

Palpi shortish; same colour as the legs, except the radial joint, which has a bright reddish tinge, especially at its extremity. The cubital and radial joints are both short, the latter is the shortest, and is slightly prominent on the inner side underneath; it is rather protuberant on the upper side, with a tuft or fringe of straight bristly black hairs directed outwards, and has at its extremity in front a strong elongation projecting outwards over the base of the digital joint, and ending in the shape of a crescent, the upper limb of which is the longer and stronger; this limb is of a curved scimitar form, and both are of a deep red-brown colour. The palpal organs are highly developed, prominent and complicated in structure; they have a large semitransparent membranous process at their extremity, near which, on the outer side, a long black spine curves round backwards in a double coil.

Falces small, very slightly divergent at the extremities, a little inclined towards the sternum, and rather darker coloured than the cephalothorax.

Maxillæ considerably enlarged at the base, obliquely truncated on the outer sides, slightly rounded at the extremity, and strongly inclined towards the labium. They are lighter coloured than the falces.

Sternum broad, convex and heart-shaped, and with the labium, which is semicircular, of a brownish black colour.

Abdomen black, very sparingly clothed with short hairs; it has four small depressed dots, nearly in the form of a square, on the upper side towards the cephalothorax, over which the abdomen projects considerably.

The adult female resembles the male, but is rather larger, and the transverse dip on the cephalothorax is not so strong.

Adults of both sexes of this spider were captured by myself in the spring and autumn of 1861, among lichens and in crevices of the bark of ash and apple trees, in the gardens at Bloxworth Rectory, Dorset. In the tuft of bristly hairs on the radial joint of the palpi it resembles N. bicolor, but differs from it in almost every other specific character, besides being greatly inferior in size.

NERIENE ELEVATA.

Colour yellowish brown, darkest and with a red tinge on the cephalothorax, which is elevated towards the front, rising abruptly behind the eyes, and with a deepish indentation on each side forwards, just below the elevation; radial joint of palpi short, strong, protuberant on the upper side, the protuberance squarish in profile, with a slightly curved black spine from its front corner, projecting obliquely towards the outer side, and with a stout blunt projection at the extremity of the joint underneath; this projection forms with the spine a kind of crescent.

Adult male. Length, 1-fifteenth of an inch. Length of cephalothorax, 1-twenty-fifth. Breadth, 1-thirtieth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax dark yellow-brown, with a red tinge; immediately behind the eyes a moderately high elevation rises rather abruptly, and slopes away towards the abdomen; on each side of the elevation, towards the eyes, is a sharp vertical indentation.

Eyes in two transverse rows curved away from each other; the hinder row is the longest and most curved. The eyes of the front row are at about equal distances from each other; the two middle ones of the hinder row are the widest apart, the two outer ones of the front row the largest, and the two outer ones of the hinder row the smallest of the eight; those of each of the side pairs touch each other, and are placed obliquely.

Falces moderately long and strong, vertical and very slightly divergent at the extremity. Their colour is like that of the cephalothorax.

Legs moderately long and robust, sparingly clothed with hairs, and of a pale yellow-brown colour; each tarsus ends with three curved claws. Relative length, 4, 1, 2, 3.

Palpi moderately long; like the legs in colour. Humeral joint long and rather curved inwards towards the falces. Cubital joint longer than the radial and slightly clavate. Radial joint strong, and protuberant on the upper side; the protuberance is squarish in profile; its hinder corner is red-brown and pointed, though sometimes the point is blunted off; the foremost corner ends with a black slightly curved spine, which projects obliquely towards the outer side; underneath the point of this spine, at the extremity of the outer side of the radial joint, is a stoutish blunt projection (which, with the spine, forms a kind of crescent), and on the inner side there is a slight dark-pointed one. The digital joint is oval, of moderate size, and slightly darker than the rest of the palpus. Palpal organs highly developed, prominent, and not very complicated in structure; at their extremity, just underneath the end of the digital joint, one of their processes ends with a small dark brown spiny curved rim with two prominent points.

Maxillæ slightly enlarged at the extremity on the inner side, obliquely truncated on the outer side, and strongly inclined towards the labium.

Labium short and semicircular.

Sternum broad, convex and heart-shaped.

Abdomen oviform, projecting considerably over the base of the cephalothorax. Its colour is yellow-brown, and it is sparingly clothed with yellowish hairs. On the upper side towards the spinners are several obtusely angular, pale, transverse lines. The female is larger than the male, and wants the elevation on the cephalothorax, but resembles it in other respects.

I discovered adult males and females of this species under dry seaweed on the shore at Southport, Lancashire; and at the roots of dwarf willows on the sand-hills at the same place, in the summer of 1859. Mr. Blackwall tells me that he received a male of this species from Scotland some years ago, but that the specimen was accidentally lost before he could make a description of it; and that Mr. Meade captured an adult male of it in Ireland, in June, 1861. I have since writing the above examined Mr. Meade's specimen, which is certainly of this species, but is a much darker-coloured spider, the cephalothorax being dark reddish yellow-brown, and the abdomen nearly black: it was captured in the county of Kerry.

WALCKENAERA BOREALIS.

Cephalothorax shining brownish black. Frontal elevation large, obtuse and sloping towards the frontal margin; central eyes of the front row largest of the eight, and not touching each other. Abdomen dark brown-black. Legs and palpi yellowish red, the latter lightest in colour; cubital joint short and comparatively slight; radial joint strong and elongated in front, curving outwards more than half over the digital joint, and with a strong process issuing from within the curvature towards the outer side. The palpal organs have a curved black spine towards their extremity.

Adult male. Length, 1-twelfth of an inch. Length of the cephalothorax, 1-twenty-fourth. Breadth, 1-thirtieth. Relative length of legs, 4, 1, 2, 3.

Cephalothorax shining brownish black, with a slight indentation in the medial line; it has a large obtuse elevation on the front part, with a strong indentation behind each lateral pair of eyes, and some fine short hairs in front; the fore part of the elevation slopes off from the summit to the centre eyes of the lower row.

Eyes nearly equal in size; in two transverse rows on the fore part of the frontal elevation; the upper row is very much curved away from the lower row, which is nearly straight; they form four pairs—one pair wide apart on the upper ridge of the elevation; a pair below, but considerably above the frontal margin, closer together and rather larger than those above them; and a pair on each side, placed obliquely on a small tubercle and nearly contiguous.

Legs moderately long and furnished with hairs. Colour yellowish red. Relative length, 4, 1, 2, 3. Each tarsus ends with three claws.

Palpi less red in colour than the legs. Digital joint tinged with brown. Radial joint larger than the cubital, and its extremity is much lengthened, hairy, and curved outwards in front of the digital joint over more than half its length, and, curving back again, ends in a dark-coloured bluntish point near its outer edge; a conspicuous prominent process issues from within the first curvature, projecting towards the outer side of the digital joint. This joint is oval and hairy; the palpal organs are highly developed, prominent, not very complex in structure; they have a curved black spine at their extremity, and are of a red-brown colour.

Falces small, conical and inclined towards the sternum.

Maxillæ short and inclined towards the labium.

Labium semicircular and prominent at the top, and with the maxillæ and falces of a brownish colour.

Sternum broad, convex and heart-shaped. Colour brownish black.

Abdomen oviform, glossy, sparingly clothed with short hairs. Colour deep brownish black.

Two adult males of this species were captured by myself under loose stones on a wall close to the Pentland Hills, Scotland, in June, 1861.

O. Pickard-Cambridge.

Bloxworth, Dorset,
February 15, 1862.

Lepidoptera of Rarer Kinds taken at Martinhoe, North Devon.—During a fortnight's visit, commencing July 21, 1861, I captured the following:—Toxocampa Pastinum, Cidaria picata, Boarmia repandaria (black-banded *var.*), B. rhomboidaria (small dark *var.* taken on sea cliff), Eupithecia debiliata (eight, rather worn), Hypenodes costæstrigalis (two very good, but remarkably plain-coloured), Endotricha flammealis, Botys terrealis, Tortrix Corylana (two of the "distinct *var.*" mentioned in Wilkinson's 'Tortrices, without fasciæ; one of the specimens has the upper wings pale yellow, without reticulations, the hind margin of a rich orange-brown; the other has only a few reticulations towards the hind margin: they were both taken near the same spot). Olindia Ulmana, Ditula semifasciana, Argyresthia Andereggiella, Pterophorus osteodactylus (common, but local).—*E. Horton; Lower Wick, Worcester, January* 14, 1862.

Observations on several Lepidoptera.—I send for insertion in the 'Zoologist' a few of my entomological notes, made during the past year.

1. *Eupithecia debiliata.* I was rather too late for this insect, and my efforts to obtain eggs from the worn females were unsuccessful; but I am quite convinced that there is no necessary connexion between it and holly, as no holly grows anywhere near my locality, while I am strongly inclined to believe that Vaccinium Myrtillus, which is plentiful there, is the proper food of the larva, as the Rev. H. H. Crewe's correspondent in the last 'Annual' correctly supposes.

2. *Eupithecia assimilata.* The double-broodedness of this "pug" I have known for some time to be a fact. Last year I took a fresh specimen on the 23rd of April, which was unusually early: I generally take and breed this brood about the second week in May; the second brood I begin to take the first week in August, in fine condition.

3. *Ditula semifasciana.* Bred from a pupa between sallow leaves, July 15, 1861; the pupa was brought from South Wales. I have never met with it common, but it seems to be widely distributed, as I have single specimens taken in South Wales, North Devon and Worcestershire.

4. *Scotosia undulata.* Larva taken on sallow, October 1, 1860; spun up between leaves, October 17; came out June 15, 1861. Shortish and thick; above light glaucous; dorsal vessel darker, edged with whitish; subdorsal line rather wide, drab; spiracular line whitish; spiracles in black rings. Head light brown; second segment with brown blotches on subdorsal line.

5. *Are Pupæ killed by Floods?* In searching some poplars near the Severn, the other day, I found several living pupæ under the loose bark a yard from the ground,

and many more pupa-cases whence the perfect insects had escaped without let or hindrance; but, lower down, though I now and then found a living pupa (there having been no flood in the Severn during the past year, at least during the larva season); empty pupa-cases were rare, and mouldy pupæ common—the result, I conclude, of former floods. I searched the soil at the roots in vain. With this question one naturally connects that of the damping or not of pupæ which we keep in our boxes or flower-pots. The Rev. J. Greene seems to leave it open, and experience rather tends to make one cautious of applying damp. Larvæ seem to resort to the roots of trees as sheltered places to form their pupæ, and usually select the driest nooks the tree affords. This seems to indicate that we should keep them from the wet as well as from the sun; and I am disposed to think that if you keep your pupæ out of doors the moisture of the atmosphere is almost sufficient for them.

6. *Is the growth of the Wings of Insects fresh from the Pupa affected by the Temperature?*—On the first day of this year a male Phigalia pilosaria issued from the pupa, and I was rather surprised to see it, as the morning was rather frosty; the wings had not begun to grow, but were otherwise perfect. The next morning I looked into the pot again; the moth was still there by itself, and its wings in the same state. I gave up all hope of a perfect specimen, but left it for the chance of breeding. The next day, January 3, I went again to the pot, and its wings were fully grown, but not quite stiff, which, however, they became in due course of the afternoon: now the 3rd of January was about five degrees warmer than the two preceding days, and I am inclined to attribute the non-development of the wings for two whole days to the want of sufficient vital heat for that purpose. I should be glad to know whether similar observations have been made by others.—*E. Horton; Lower Wick, Worcester, January* 14, 1862.

Pupæ destroyed by a Caterpillar.—At this period of the year I usually examine the different boxes which contain my pupæ. I have been doing so during the past few days, and great has been my dismay at the result. I find that they have been supplying a luxurious winter repast to an odious caterpillar, of which the following is a description:—Length about half an inch; semi-transparent. The interior, which is blackish, can easily be seen. The ground colour is grayish white, and when the reptile is crawling the segments appear white. Head brown, and on the next segment is a black patch. The sides are graced with a row of bristly hairs. If any one recognises the beast from the above description, and will, either through the pages of the 'Zoologist' or by private communication, tell me what it is, I shall feel obliged. I trace the evil to my having used moss (taken off walls) for the purpose of covering the pupæ. The caterpillar forms a kind of tough leathery cocoon, in which, apparently, it moves about. At any rate it attaches itself, with its cocoon, to the unfortunate pupa. To give some idea of the havoc caused by it among my pupæ, I append the names of some which, either in whole or part, have been destroyed by it, *viz.* Cymatophora ocularis, Clostera reclusa, Corycia taminata, Eupithecia pimpinellata, E. expallidata, E. innotata, E. helveticaria, E. tripunctata, Ephyra orbicularia, E. Omicronaria, &c., &c.—*Joseph Greene; Cubley Rectory, Doveridge, Derbyshire, February* 20, 1862.

Periodical of the nature of the late 'Intelligencer' wanted.—I take this opportunity, on my own part, of expressing a wish (shared, I believe, by many others) that some enterprising entomologist would undertake the editing of a weekly periodical of the nature of the late 'Intelligencer.' Only do not let it be a medium for either editor or correspondents to indulge in coarse vulgarisms and personalities. It is to this cause, and to this cause alone, that we are to attribute the gradual decay and final extinction of the 'Intelligencer.' That such a periodical, conducted in a gentlemanlike and impartial spirit, would be well supported I entertain no doubt whatever.—*Joseph Greene.*

Argynnis Lathonia in Suffolk.—The account in the 'Zoologist' (Zool. 7913) of the capture of Argynnis Lathonia, by Captain Russell, in a meadow-field near Lavenham, Suffolk, confirms my opinion that A. Lathonia has claims to be considered a truly indigenous species. It was said in a former paper on the subject that there ought to be localities where it could be collected annually: now if such localities do not exist, there are those in which it is often to be met with; one, for instance, is the Devil's Ditch, near Newmarket, where, during my residence at Burwell, from the year 1848 to 1854, I saw three specimens which were taken there, and heard of others, and on my first going to Sudbury I called on a Mr. Barwick, a bird-stuffer (who endeavoured, but without much success, to collect insects for sale), and requested him to point out to me the most favourable localities of the neighbourhood, when he mentioned Assington Thickets as the one he had been the most successful in, gave me the names of many good and local species which he had found there, and stated that on one of his visits he found a caterpillar suspended by the tail from a branch of hazel, which he left undisturbed till his next visit, when it was changed into a chrysalis; this he took home, and in a short time it produced a fine specimen of A. Lathonia: his son, who generally accompanied him in his excursions, visited the Thickets next day, and captured two more specimens of A. Lathonia on the wing; the three specimens he sold to Mansfield, a travelling dealer in insects, for five shillings, and although I did not see the specimens I am inclined to think the account correct, because I found all his other statements of the productions of that locality correct, and also because he immediately pointed out the insect on my showing him my cabinet, the specimen in which was taken by me about six miles from the Thickets and two and a half from Lavenham, as recorded in the 'Zoologist' (Zool. 30). I have little doubt that I saw two more on the wing the following year, one in a meadow near Lavenham Church, and the other in a pasture on the Monk's Eleigh road. Assington Thickets being surrounded by high wood (not "high road," as misprinted in the 'Zoologist,' p. 401), is a very unlikely place for specimens from the Continent to be blown into.—*William Gaze; Great Thurlow, near Newmarket, Suffolk, March* 3, 1862.

Occurrence of Chærocampa Celerio at Upper Tooting.—On Saturday last was captured a very good specimen of Chœrocampa Celerio, at Upper Tooting, and kindly sent alive to me. Is this not a very unusual time for its appearance? It is not very lively, but I should think that might be owing to the cold weather.—*William Rogers; Grove Cottage, Merton Road, Lower Tooting, S., March* 19, 1862.

Food-plants of Eupithecia pumilata and Boarmia repandata.—Mr. Stowell, in his interesting paper on "The Entomology of the Isle of Man" (Zool. 7898), remarks that though Eupithecia pumilata is rather common in the imago state, he cannot find the larva, and does not know the food-plant. It has never been my good fortune to meet with this larva in the wild state, though I have reared a good many from the egg. My friends and correspondents Messrs. Hellins, D'Orville, Greene and Buckler, have taken it upon the following plants:—Spartium scoparium, Eupatorium cannabinum, Senecio Jacobæa, Potentilla reptans, Clematis vitalba (growing wild), Clematis odorata, Solidago canadensis, Scabiosa atropurpurea (in gardens). It varies in colour according to the flower it feeds on, being whitish and greenish on Clematis, yellow on Senecio and Potentilla, pink on Eupatorium, and deep purplish red on Scabiosa.] I believe it is polyphagous. When reared from the egg in confinement it will eat almost any flower that is given it. It has a way of most effectually concealing itself in the petals of the flower upon which it is feeding. I have seen one work itself quite down into the calyx of a flower of Centaurea nigra or Apargia hispida. Mr. Stainton is certainly right in saying that the larva of Boarmia repandata feeds upon trees, or rather underwood. Some few years since my friend Mr. Hawker and myself bred several dozen most beautifully marked specimens from larvæ taken by lanthorn-light in the Forest of Bril, Hampshire. The underwood upon which they were feeding was two-years growth, and consisted of blackthorn, whitethorn, crab, aspen, cherry, birch, hornbeam, hazel, sallow and ash. They preferred the three first-named bushes, and were by no means uncommon upon birch.—*H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, March* 4, 1862.

Description of the Larva of Scotosia vetulata.—Short and stout; in form much resembling Cheimatobia brumata. Back and central dorsal line black, the latter bordered with white. Sides yellow. Spiracular line black, broken and unconnected. Spiracles black. Head black; collar yellow, with a transverse blackish dotted line. Feeds between spun-up leaves of Rhamnus catharticus. Eats the outer cuticle of the leaf, leaving the membrane bare. Full fed the first week in June. Pupa inclosed in an earthen cocoon, long and slender. Abdomen tapering, bright red. Abdominal divisions dark red. Wing-cases paler and more transparent. The perfect insect appears in about three weeks.—*Id.*

Description of the Larva of Scotosia dubitata.—Ground colour pale yellowish green. Central dorsal lines, two in number, whitish yellow. Subdorsal lines, two in number, whitish yellow. Spiracular line bright yellow and orange. Back and sides occasionally studded with a few black tubercles, and always with a few short whitish hairs. Belly destitute of markings. Feeds on Rhamnus catharticus. Full fed the middle of June. Pupa dark reddish brown, inclosed in an earthen cocoon. Perfect insect appears in about a month.—*Id.*

Description of the Larva of Scotosia rhamnata.—Ground colour vivid green. Central dorsal line dark green; circulation very apparent underneath. Subdorsal lines very slender and indistinct, yellowish. Segmental divisions deep yellow. Spiracular line pale yellow. Subspiracular line pale yellow, slender. On each side of the three posterior segments below the spiracles a broad purple stripe. Anal plate, tip and prolegs deep purple. Belly traversed longitudinally by three whitish lines, the central one broader than the others, and bordered with small yellowish spots. Feeds on Rhamnus catharticus. Full fed first week in June. Pupa dark reddish brown, inclosed in an earthen cocoon. Perfect insect appears in from three weeks to a month.—*Id.*

Acronycta Alni bred in February.—On the 22nd of last month a male specimen of this insect was produced from the larva I obtained last August, a description of which was given in the 'Zoologist' (Zool. 7717). The pupa was kept during the winter in a recess near the fire-place of a warm room, which accounts for the appearance of the perfect insect at a period so unusually early.—*S. Stone; Brighthampton, March* 17, 1862.

Economy of Volucella Larvæ.—I have a number of larvæ of one or more species of

Volucella, which were obtained last summer from wasps' nests. They have been hybernating throughout the winter, and are now just beginning to assume the pupa state. The change is taking place inside the larva-skin, the only external evidence of the change being a decrease in the length and an increase in girth, with a slight hardening of the larva-skin: and, moreover, one larva from the above number, which was separated from the rest and kept during winter in a very cold situation, is also, I perceive, undergoing its change into a pupa. The larvæ have been identified as those of Volucella by Professor Westwood, by whom a specimen was exhibited at the October meeting of the Entomological Society. They have been kept through the winter in the same recess as the pupa of Acronycta Alni, but the temperature does not appear to have had much effect upon them, for, if I am not mistaken, I have seen a species of Volucella upon wing in March.—*S. Stone.*

"*Bees and the Art of Queen making*" (Zool. 7907).—I was pleased to see that my friend Mr. Woodbury had answered Dr. Leitch's new theory of excess of temperature having an effect on the royal cells in hives, and agree most thoroughly with what that accomplished apiarian advances. It is quite true that it is too much the fashion to find fault with the great Huber's well-authenticated observations on the subject. What could induce Dr. Leitch to suppose that in the upper edges of the combs in a hive the temperature was higher than in the centre, I cannot conceive. In numerous observations in my unicomb hives, a few years ago, the queen was less frequently near the edges of the comb than in any other place, generally traversing near the centre, and laying her eggs there first, and, when one side was finished, passing through an aperture made by the bees to save time to go from one side to the other: this aperture, all observers know, is situated near the centre towards the top of the comb, and is another instance of the wonderful and Divine guidance of the bees in economizing time and distance. In these observations I do not allude to the time of swarming, as in that case there is an increased heat, from the number of bees collected. Although M. Huber is right in all his great discoveries, yet he is now and then careless ("Aliquando dormitat bonus Homerus"): where he should say, "With now and then an exception," in his zeal he says, "After the old queen has conducted the first swarm from the hive the remaining bees take particular care of the royal cells, and prevent the young queens successively hatched from leaving them, unless at an interval of several days between each." In ninety-nine cases in a hundred this is the fact; but even to this there is sometimes an exception. In the year 1836 I had a second swarm about to go off from one of my hives, and as they came out more slowly than usual I went within half a yard of the hive, and observed no less than three queens at one moment on the alighting-board. The swarm went off and divided, and settled on three different bushes and trees; the whole were united and did not form a quantity of more than a quarter of a peck: they were very unsettled all the day of swarming after being hived, but next morning I found two dead queens under the hive: the hive worked well afterwards. It is right to mention that the weather had been very showery and unsettled: it must also be mentioned that the last batch of young bees which left the hive were scarcely able to fly with their juvenile queen; they were of a different colour, nearly a leaden colour, and upwards of two hundred of those which issued from the hive fell within three or four yards, unable to fly; they appeared to me to have been hatched not more than an hour previously. I picked nearly the whole of these bees up, and they entered the new hive with the rest, by creeping up the sides. It seems that for a few hours a plurality of queens will sometimes be allowed.

I observed that bees never carry a dead queen any distance from the hive, as they do a worker, but allow her to drop near the entrance,—the size may be partly the cause,—yet we constantly see them carry out dead drones, but seldom at the general slaughter; these are generally left close to the hive. In the case mentioned there is no doubt that these queens, had the weather been dry and sunny, instead of wet and unsettled, would have issued at an interval of, most likely, three days between, at least, as to two of their numbers. The great discovery of the manner of the impregnation of the queen bee, the peculiarity also, at certain times, of her laying only the eggs of drones, and other circumstances enumerated by Huber, will hand down that great and unassuming naturalist's name to the latest posterity.—*H. W. Newman; Hillside, Cheltenham, March* 13, 1862.

Note on Anomalon Vesparum.—It is somewat singular that of two nests of Vespa vulgaris I had at work during the summer of 1859 in a window of the house I have used as a vespiary for some years, one should have produced vast numbers of a coleopterous parasite,—Ripiphorus paradoxus (see Zool. 6906),—while the other was full of an hymenopterous one, for the name of which (Anomalon Vesparum) I am indebted to Professor Westwood. But the most remarkable thing is that, although a few of the latter have from time to time made their appearance in the winged state, the combs still contain immense numbers that have not yet showed themselves openly. On opening several of the cocoons, a few days ago, I found that each contained a living example of the insect perfectly formed, and who, the moment the top of the cocoon was removed, marched out, stretched its legs, passed its fore feet rapidly over its head and antennæ, for the purpose apparently of removing any superfluous moisture, cleaned its abdomen and smoothed out its wings by means of its hinder feet, and was then prepared for immediate flight. Now the question (and I take it to be a curious physiological one) is, How long had it been lying in that perfectly-formed state, and how much longer would it have remained cooped up and still retain its vitality, had it not been released from its prison by artificial means? On opening the cocoons a strong smell of something akin to formic acid was emitted. Each cocoon had a beautifully delicate gold-coloured lining, in which the insect was enwrapped.—*S. Stone; March* 15, 1862.

Musical powers of Agabus bipunctatus.—We have heard of singing fish and singing beetles in the Tropics and at the Antipodes, but I have never heard of any of the latter at home, except those mentioned by Mr. Westwood, in his 'Introduction, or Modern Classification,' vol. i. p. 103, where he speaks of Pælobius Hermanni, which makes a noise when held in the fingers. Mr. Westwood also quotes Frisch, who says that Acilius sulcatus makes a noise under water; and Kirby, vol. ii. p. 393, says, "Concerning their shouts of joy and cries of sorrow I have little to record; that pleasure or pain makes a difference in the tones of vocal insects is not improbable; but our auditory organs are not fine enough to catch all their different modulations." Having had in an aquarium in my sitting-room, for a long time, two specimens of Agabus bipunctatus, these two beetles puzzled me for a long time, or rather, I should say, a voice proceeding from the aquarium, very much like the faint gryllous noise of a grasshopper; it begins very faint and gradually increases in intensity until it reaches that of a grasshopper. This noise is only made in the night, and is probably the sexual call, as they appear to answer each other from either end of the aquarium. I have frequently taken the light and looked into the water to see where they were; sometimes I have seen them at the bottom (about a foot deep) and sometimes at the top, and they make equally as much noise under water as when at the top; but I have never been able to discover the *modus operandi.* They always appear perfectly still when making this singing noise: several of my entomological friends have heard it, but have never before heard anything like it proceeding from beetle-musicians. The singing talent was discovered in this way: a friend of mine was sitting writing at a table close by the aquarium, the other evening, when the scratching of the quill pen upon the paper somewhat imitated the noise or singing of the beetles, who must have heard this, for they distinctly answered the noise made by the pen. After we had discovered the beetles had an ear for music we repeated the scratching, so as to imitate them as nearly as possible, and they as distinctly answered after each scratching. I am persuaded that the noise or singing is oral and not made by the rubbing of one part against another, as some of the Longicornes do when handled or held in the hand. Again, the answering the scratching imitation, I think, settles the question as to the singing noise being a sexual one, being produced by both sexes, and as one of mine appears to sing more than the other, this is most likely the male; but of this I am not certain, as I have not captured him when singing, but this I am certain of, that it is male and female I have in the tank.—*Edward Parfitt; Devon and Exeter Institution, March* 5, 1862.

[My correspondent has overlooked the interesting paper by Mr. Smith on the musical powers of the British species of Acalles (Zool. 7218): the genera Aromia, Necrophorus and Cychrus are the most celebrated among the beetle-musicians of Britain.—*E. N.*]

Capture of Scydmænus Godarti and other Coleoptera new to the British Fauna.—A short time ago M. Aubé examined a great number of our unknown Coleoptera, and through his kindness I am enabled to add the following names to the list of our indigenous species, *viz.:*—Scydmænus Godarti, *Latreille;* S. pumilio, *Schaum;* Trichopteryx attenuata, *Gillm.;* T. Guerinii, *Fairmaire.*

Scydmænus Godarti is the largest of the British Scydmæni, being nearly equal in size to E. tarsatus; it also resembles that species in colour, but may be distinguished from it by the shape of the head and thorax, and by the pointed elytra.

Scydmænus pumilio is allied to S. Sparshallii, but differs from that species in its darker colour, wider form and more obtusely pointed elytra.

Trichopteryx attenuata may be known from the other species of the same genus by the transverse foveæ at the posterior angles of the thorax, and also by having the elytra much attenuated towards the apex, and by the colour of the antennæ, which are almost entirely black.

Trichopteryx Guerinii is intermediate in size between T. sericans and T. pygmæa; it is much depressed in shape, and the elytra are usually more or less red; in some specimens they are wholly of that colour.

Of the above the three last were taken at different periods during the last two or three years, by myself, near this place; I have also received T. Guerinii from Dr. Power. Of S. Godarti I captured several specimens, last July, from Sherwood Forest.

To these I must add—not, however, on the authority of M. Aubé—Cephennium intermedium, *Aubé*, and Ptenidium Formicetorum, *Kraatz.*

Cephennium intermedium may be known from C. thoracicum by its dark colour, smaller thorax, more elongate shape and rather longer antennæ.

I found a single specimen of this insect, among moss, near Silchester, in Hampshire, in July, 1859.

Ptenidium Formicetorum is allied to P. apicale, but is smaller and narrower than that species, with the thorax less convex and the elytra more pointed at the apex; the elytra are also entirely of a bright rufo-piceous colour.

It is highly probable that this species exists in many collections, confounded, as it was until very lately in my own cabinet, with P. apicale.

This part of the kingdom seems to be unusually productive of Scydmæni; during the last few years we have taken the following rare species, besides the two already mentioned, *viz.:*—S. pusillus, S. exilis, S. angulatus, S. elongatulus, S. Sparshallii and S. nanus.—*A. Matthews; Gumley, Market Harborough, March* 20, 1862.

Dragonflies captured at Sea.—When my brother-in-law, Captain J. C. Tyrwhitt-Drake, 1st Battalion 2nd Queen's Royals, was returning from China with his regiment, in the transport "Alfred," on the 22nd of January, 1861, great numbers of dragonflies came on board about 6 A.M., and remained flying about the vessel until about 8.30 P.M., when they disappeared. The vessel was then in lat. 23° 38′ South, long. 77° 3′ East, wind fresh from North-West; Rodriguesbore N.W. 600 miles. I have shown the specimens captured by my brother-in-law to Mr. R. M'Lachlan, who believes them to be Libellula mauriciana of Rambur, a species which inhabits the Mauritius.—*W. S. M. D'Urban; Newport, near Exeter, February* 3, 1862.

Note on the Habits of Phryganidæ.—In a paper by Herr Nietner on "The Natural History of the Enemies of the Coffee Tree," published in the 'Edinburgh New Philosophical Journal' for January, 1862, that gentleman adds some supplementary notes on insects, which, though not actually injurious, frequent the trees when covered with that peculiar insect-secretion called "honey dew," and mentions that, among others, several species of Phryganidæ are attracted thereby, especially Chimarrha auriceps, *Hagen.* He also takes occasion to remark that this is opposed to the once-received opinion that these insects take no nutriment in the perfect state. I fancy that this latter idea has been successfully exploded since it became fashionable to "sugar" for Noctuæ. Every lepidopterist is aware that on certain nights many species of caddis-flies will frequent the sugared trees, especially Phryganea varia and several species of the genus Stenophylax. It may be interesting to remark also, in relation to this subject, that the nectar of flowers possesses considerable powers of attraction. Mr. Wormald has several times taken a species of Limnophilus on thistle blossoms, and I myself have captured individuals at sugar, which possessed so powerful an odour of the flowers of the Echium, that I have not the slightest doubt that they had been regaling themselves on that plant, which grew in abundance close by, and only left it for the more powerful attraction of the sugar.—*R. M'Lachlan; Forest Hill, March* 17, 1862.

Immense Cephalopod near Teneriffe. — In case the readers of the 'Zoologist' have not observed it, I would call their attention to the account, in the 'Illustrated London News' of January 18, of an immense cephalopod seen and almost captured by the crew of a French boat near Teneriffe. It was estimated at fifteen or sixteen feet in length. It appears to have attracted the attention of the scientific in France, and allusion is made to a specimen in the Museum of the College of Surgeons, London, which I believe was found during Captain Cook's first voyage, floating dead. This individual was judged, from its remains, to have been four feet long in the body, or with arms seven feet; very respectable dimensions, but far inferior to the one now under consideration. Such a specimen might tempt one to believe that some foundation existed for the Indian accounts of enormous cuttle-fish sinking luckless vessels by clasping them in their gigantic arms. At least it is to be regretted that such a specimen could not be secured, though it is said consideration for the safety of his men induced the commander to forbid further attempts. Shell-collecting on this scale would be hazardous employment, as such a mollusk might make short work of the conchologist.—*George Guyon ; Ventnor, Isle of Wight, January* 23, 1862.

Helix rufescens of Montagu hairy in the Young state.— Having lately become acquainted with your valuable publication as a medium of communication between those interested in Natural History, I feel that I should be hiding my light under a bushel were I to abstain from bringing to your notice, for the information of such of your readers as may be conchologists, the settlement of a doubt of long standing with regard to Helix rufescens of Montagu. I observe in Dr. Gray's edition of Turton's 'British Shells,' p. 157, that "Montagu represented the young of this species as clothed with hairs." This fact, however, Dr. Turton and Dr. Gray doubted, and say that Montagu "probably mistook the Helix hispida for it," and "both the young and old shells are quite bald." Mr. Kenyon also expressed the same opinion in his admirable "Remarks on British Land and Fresh-water Shells," in Loudon's 'Magazine of Natural History,' i. 425. I was induced to adopt Montagu's view in 1860 by finding, in a walled garden near Bath, numerous specimens of a minute hairy shell, evidently young, from the unfinished state of the mouth. In this garden I have failed to discover more than three kinds of Helix, *viz.*, H. aspersa, H. pulchella and H. rufescens, and therefore feel obliged to identify it with the latter as the species which it most resembles. It is probable that Dr. Turton and Mr. Kenyon fell into their mistake through not having examined the young shells under a magnifier. I am supported in my view by the opinion of Mr. J. G. Jeffreys, to whom I lately sent some specimens. After examining about a hundred specimens, I find that the shell is thickly clothed with hair when from one-sixteenth to one-eighth of an inch in size, after which the hair seems to fall off. The maximum and minimum size of the shells in my collection is from one-fourth to one-sixteenth of an inch ; all found in the same locality.—*Bruce Hutton ; 61st Regiment, South Camp, Aldershott.*

*Notes on Sea-Anemones.**—As a humble disciple of that branch of Natural History which your valuable researches have tended so greatly to develope, I think it will not be uninteresting to you to receive a report of a circumstance which I do not remember to have seen recorded in your own delightful books, or in those of Mr. Kingsley or Mr. Lewis. In a tank containing about sixty anemones, &c., are eight fine specimens of the Sagartia nivea, which I obtained from Ilfracombe in August last: they have been fed regularly since captivity with raw meat, oysters, &c. about twice a week. Two individuals, measuring each about one inch in diameter, when expanded, were located on a piece of rock. On Saturday morning, about half-past nine o'clock, on syringing the tank, according to custom, I observed that the mouth of one of them was unusually and very greatly distended; the fissure reaching almost across the disk of the anemone, whose circular appearance was thereby changed for an irregular loop-shaped form.* On reaching home, about five o'clock, I found, to my astonishment, that fission had taken place, and that the object of interest had, by some wonderful metamorphosis, become two distinct creatures, each about as large as a fourpenny-piece. They had moved apart and were partially expanded, looking none the worse for Nature's operation. I have since fed them and they appear quite at home, though a little ragged at one side of the column where the fissure occurred. I had noticed for several weeks past that the opaque whiteness of my snowy friends had changed for a pearly hue; and I had a strong impression that one, if not two others, will eventually multiply in this manner. With the exception of A. Cereus, if my memory is correct, I do not find any other instance of this kind mentioned in your 'Actinologia,' to which I immediately referred for a precedent. Have you met with any other of the S. Ichthystome since the two described in your 'Actinologia'? I have what appears to me a specimen, although its colours are not so brilliant as the figure in your plate ii. It was brought from Weymouth (the correct locality), on an oyster-shell, a wee little thing, which I have once fed up (when expanded) to the size of a silver twopenny-piece: it seems very hardy. A fine A. Dianthus (of orange-buff colour), in my possession, has just moved its quarters, and left a small portion of its base, which is rapidly assuming the shape of a young individual. This is further in confirmation of your excellent description of this beautiful anemone.—*W. R. Hughes; the General Hospital, Birmingham, February* 20, 1862.

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* Addressed to P. H. Gosse, Esq., F.R.S., and kindly communicated by him for publication in the 'Zoologist.'

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

March 3, 1862.—FREDERICK SMITH, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—'Proceedings of the Royal Society,' vol. xi. No. 47; presented by the Royal Society. 'The Canadian Naturalist and Geologist, and Proceedings of the Natural History Society of Montreal, conducted by a Committee of the Natural History Society,' vol. vi.; by the Society. 'The Zoologist' for March; by the Editor. 'The Intellectual Observer,' Nos. 1 and 2; by the publishers, Messrs. Groombridge and Sons. 'The Journal of the Society of Arts' for February; by the Society. 'The Literary Gazette' for February; by the Editor. 'The Athenæum' for February; by the Editor. 'List of the Specimens of Lepidopterous Insects in the Collection of the

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* My correspondent subsequently suggested a figure of 8, or two circles slightly overlapping, as conveying a clearer idea of the form.—*P. H. G.*

British Museum, part xxiii. Geometrites;' by the Author, Francis Walker, Esq., F.L.S., &c.

Certificates in favour of George Robert Gray, Esq., the Rev. T. H. Browne and Alfred Haward, Esq., as Members of the Society, were read a first time and ordered to be suspended in the Meeting Room.

There were on the table, for distribution among the Members, copies of the Address delivered at the Anniversary Meeting on the 27th of January, 1862, by J. W. Douglas, Esq., President; also copies of an Address delivered at the ordinary Meeting on the 3rd of February, 1862, by H. T. Stainton, Esq.

The Society's Collection.

The President, by the desire of the Council, stated to the Meeting the steps taken by the Council in consequence of their attention having been called to the state of the Society's Collections: the Council had held two Special Meetings, had obtained from the Curator an explanation of the manner in which his time was employed, and, after full consideration thereof, had passed the following Resolution:—"That the thanks of the Council be given to the members of the late Library and Cabinet Committee for their very careful Report on the state of the Society's Collections; and the Council, having requested and obtained from the Curator an explanation with respect to the employment of his time when at the Society's Rooms, considers such explanation satisfactory."

The 'Transactions' of the Society.

The President announced that the Council had rescinded the Resolution of Council of the 7th of February, 1859, by virtue of which all Members and Subscribers whose subscriptions were not in arrear received the 'Transactions' gratis; that in future Members and Subscribers resident in or within fifteen miles of London would have to purchase the 'Transactions,' as was the case prior to February, 1859 (and see 'Bye-Laws,' ch. xxi.), but that the price to Members and Subscribers would be one-half the price to the public. It was also announced that with the forthcoming first part of a new volume would be commenced the "Third Series" of the Society's 'Transactions,' and that a general index to the five volumes of the second or "New Series" would be prepared and published as soon as possible.

Exhibitions.

Mr. Newman exhibited series of bred specimens of two British species of the genus Cabera. He remarked that each series had been arranged with the view of showing that the particular colouring supposed to be distinctive of Cabera rotundaria was nothing more than an intermediate state between an insect with two and one with three transverse lines or bars. In the upper specimens in each series there were but two transverse bars; in the specimens next following the first or basal bar appeared separating into two bars, yet these were almost contiguous; in the succeeding specimens they grew more and more distant, until at the bottom of the series, both in C. pusaria and C. exanthemaria, the three transverse bars were equally distinct and equally equidistant. The rounded form of the wings, which was supposed to have suggested the name of "rotundaria," was proved by this series to be equally instable.

Mr. Newman expressed his obligations to Mr. Thomas Huckett, who had bred the whole of the insects exhibited, and had arranged them as they now stood, affording a convincing proof that C. rotundaria was a mere variation, to which both the acknowledged species C. pusaria and C. exanthemaria were liable.

Mr. Huckett, who was present as a visitor, stated that the larvæ from which he had bred the specimens exhibited were all taken at the same time and place, and that he had but two species of larva, *viz.*, those usually known as the larvæ of C. pusaria and C. exanthemaria.

Mr. Dunning referred to the exhibition of Cabera rotundaria by Captain Russell, at the February Meeting of the Society, as corroborating Mr. Newman's conclusion, and stated that the question of the specific distinctness of that form had on several occasions been brought under the notice of the Northern Entomological Society, the members of which, who had had frequent opportunities of raising Cabera from the larva, had satisfied themselves that C. rotundaria was in fact but a variety.

Mr. S. Stevens exhibited some butterflies' eggs, sent to him by Mr. Nathaniel Plant, from Rio Grande. He was not able to give any further information concerning them.

Mr. W. Wilson Saunders exhibited the larva and pupa of Endomychus coccineus, which had been recently taken in the neighbourhood of Reigate, under the bark of a log of elm which was lying on the ground. The larvæ were found fifty together, and were apparently feeding on a white fibrous flocculent fungoid substance underneath the bark. They bore a very close resemblance to the larvæ of some species of Coccinella. Many of the perfect insects were found at the same time in company with the larvæ. It was a curious question how the parent insect, when laying her eggs, discovered the presence of the fungoid substance which was necessary for the sustenance of the larvæ to be born. It could not be by sight, and Mr. Saunders thought it was most probably by smell, which seemed to be the only sense that we know insects to possess to which such a discovery could be attributed.

Mr. Saunders also exhibited a piece of a branch of dead wood from South Africa, where it had been found by Mr. Cooper, tunnelled down the centre by a species of bee, Xylocopa divisa. The tunnel was round, very neatly constructed, with a circular orifice pierced through the bark, and was made for the purpose of nidification.

Mr. Saunders also exhibited two portions of the stem of a greenhouse creeper (Jacsonia), to show the effect of the punctures of the common mealy bug (Coccus) upon the bark. These punctures produce warty elevations, which are covered with a whitish skin, and are internally green and somewhat succulent. When the punctures are very numerous and the bark becomes covered with warts, the functions of the bark appear to cease, and great injury to the plant ensues. Mr. Saunders made some remarks on the desirability of a history of the insects peculiarly destructive to plants, of which so many new discoveries had of late years been made.

Mr. Saunders also exhibited the female, the egg and the young larva (?) of Extalosoma Hopei, a rare and interesting insect of the family Phasmidæ, from the New Hebrides. The eggs were polished, oval, of a dull mottled brown colour, and about one-tenth of an inch in length. The larva escaped from the egg at one end, throwing off from it a rounded operculum, in which was a deep circular impression. The larvæ forwarded as those of E. Hopei had no resemblance to the perfect insect, and, although evidently of the family Phasmidæ, it seemed very doubtful whether they belonged to the insect in question. They were long and thin in the body, with very long legs, and short rather stout antennæ. In the dried state they were of a dull black-brown colour.

Professor Westwood agreed with Mr. Saunders in doubting whether the larvæ could be those of Extalosoma Hopei, and thought they must be the larvæ of one of the long-legged species of Phasma.

Mr. Stainton exhibited a specimen of a Noctua new to the British Fauna, Toxocampa Craccæ, *W. V.*, a species stated by Guenée to feed on Vicia multiflora, and to be common in Austria, Germany and France, in July and August. The specimen exhibited had been taken, along with two or three others of the same species, by the Rev. E. Horton, on the north coast of Devonshire.

Dr. Knaggs exhibited a box of insects collected by Mr. James A. Carrighan, at Ararat, Victoria.

The President exhibited a case containing a fine collection of insect architecture, consisting of nests of bees, wasps and fossorial Hymenoptera. Amongst the more remarkable was a nest of a species of Larra, which closely resembled a piece of sponge, but which was no doubt composed of the scrapings of the stems and leaves of woolly plants. This nest was attached to the under side of a leaf, though the species of the genus to which the constructor of the nest belonged were usually burrowers in sandy banks, &c. Nests of a species of Pelopæus, composed of the dung of animals and attached to reeds, were also remarkable. The Pelopæi were the mud-daubers of North America, but the nest exhibited was from Port Natal. Many specimens of exquisite structure from Brazil were also exhibited, particularly the nests built by the wasps comprised in the genus Polybia. Altogether the case contained upwards of a hundred specimens of the architecture of insects.

The President also exhibited a Coleopterous insect which he characterized as not only a species new to Britain, but as belonging to a genus hitherto not represented in the British Fauna. The insect in question was brought to him by Dr. Power. Two specimens had very recently been taken in the New Forest. It appeared to the President to be identical with the species which in the British Museum collection was labelled "Endophlæus spinosulus, *Latr.*"

Mr. Pascoe, Mr. Janson and Professor Westwood, however, doubted whether the specimen exhibited were the true Endophlæus spinosulus of Latreille.

Mr. W. F. Kirby showed some specimen sheets of Dr. Hagen's 'Bibliotheca Entomologica,' which it was expected would be published in July next, at the price of ten shillings or thereabouts.

Dr. Wallace called the attention of the Meeting to a plan he had recently adopted of mounting Micro-Lepidoptera. He employed common wax lights, simply rolled and flattened out: they were at once soft and retentive of the small pins; portions could be cut of any length that might be requisite to hold the number of specimens which the collector placed in his cabinet, and the whole series of the insects be fixed in the cabinet by means of a strong pin passing through either end of the flat strip of wax. Dr. Wallace had found this plan very advantageous in moving large numbers of specimens, and especially so in averting accidents from letting the insects fall. The strip of wax acted as a parachute, and by its lightness averted the destruction which might otherwise befall the specimens.

The Secretary read, on behalf of Mr. George Wailes, of Newcastle, the following paper:—

Notes on Bembidium nigricorne, Gyll.

"It may not be uninteresting if I state the source whence the specimens of Bembidium nigricorne, *Gyll.*, alluded to by Mr. Waterhouse at the Meeting of the Society on the 6th of February, 1860, were derived, especially as the species has hitherto only been recorded as captured in the Scandinavian district of Europe. I first took it in this vicinity (Newcastle), in May, 1827, in some numbers, and not finding it agree with any of the species described by Marsham, I waited till Mr. Stephens' 'Illustrations,' then just commencing, had reached the Bembidiidæ. Being equally unable to identify it with any of his descriptions I named it Tachypus nigripes, and during that and the two or three following years distributed it amongst my correspondents under that name. In this way the cabinets of Mr. Dale, Mr. Waterhouse, Mr. Babington, Mr. Sparshall, Dr. Howitt, Mr. Rudd, Mr. Stephens, Mr. Curtis, and no doubt others, were supplied; and when I arranged my own cabinet of Coleoptera, on the appearance of the second edition of Stephens' 'Nomenclature,' in 1833, I placed it there under the above name. Here the specimens remained, and the circumstances had escaped my memory until just before Mr. Waterhouse's notice was read before the Society, when my old friend Mr. Dale reminded me of them, saying he had forwarded a specimen to Mr. Waterhouse.

"It would appear that Gyllenhal had detected the species before me, as his volume was published in 1827. His description, as well as that of Jacquelin du Val, accords very well with my specimens, though I cannot help thinking that my name was the more appropriate one, as well as distinguishing it at once from Marsham's rufipes.

"I am sorry to trouble the Society with this trifling communication, but as our 'Transactions' afford the only printed means of intercourse with our continental brethren I may perhaps be excused doing so."

Mr. Walker read a description of a new genus and species of Noctuites. The insect described was unique. It was discovered at Halifax, Nova Scotia, by B. Piffard, Esq., and by him presented to the British Museum. It belonged to the family Glottulidæ of Guenée, and was described by Mr. Walker under the name of Phornacisa Piffardi.

Mr. W. F. Kirby read some "Notes and Observations on the Lepidoptera Rhopalocera occurring in the county of Sussex," and exhibited some specimens in illustration.

Captain Cox, after referring to certain letters and articles which had recently appeared in the 'Times' and other papers on the subject of the ravages committed by Scolytus destructor, objected to some of the statements therein contained, and in particular to the assertions that this subject seemed scarcely to have received from scientific men the attention it deserved, and that any method of prevention or cure seemed to be unknown. Captain Cox reminded the Society of the nature, extent and successful result of the experiments made by himself during the last twenty years, and maintained that his plan of partially barking the affected trees was completely successful. He said that he had that morning been with the First Commissioner of Public Works to inspect the trees in the Parks, which were in a bad state.

Captain Cox also made some remarks on the injury done to the oaks by Sesia Cynipiformis, and to the lime trees by Chrysoclysta Linneella, and suggested that the lime trees should be treated in the same way as the elms which were attacked by Scolytus.—*J. W. D.*

Correction of an Error.—In the article on "Leporines" in last month's 'Zoologist' there is a misprint of sufficient importance to require correction. At p. 7928, line 10 from bottom, (*engénérique*) should be (*engénésique*), a word constructed by M. Broca to express that class of hybrids in which the animals are perfectly fertile *inter se*, as well as with either parent.—*E. W. H. Holdsworth.*

The Hare catching Mice.—It is stated by Bishop Pontoppidan, in his 'Natural History of Norway,' fol. 1755, p. 9, part 2, "that hares are frequent in Norway, and are very cheap in winter. They are smaller than in Denmark, and change colour, in the cold season, from brown or gray to snow-white. In the woods they catch mice like cats, and pursue them under the snow; they otherwise in necessity live upon birch catkins." Did any of our Norwegian naturalists observe or confirm this singular and abnormal habit of the hare mentioned by this old divine? Bell distinctly states "the hare is as exclusively a vegetable feeder as perhaps any known mammiferous animal." —*Edward Parfitt.*

Notes on the Snake Rat (Mus Alexandrinus). —The Society will doubtless recollect that last year I exhibited at one of our Meetings two living rats, one of which I believed to be new to the British fauna, at least so far new as that, till then, it had been unrecognized and undescribed as distinct. The other was a specimen of the old English black rat (*Mus rattus*); and this was shown, not on its own account, but for contrast and comparison. And I selected the black rat for this comparison because it so much more closely resembles the new one than does the brown rat (*M. decumanus*), which is quite different. If therefore the new rat is a mere variety of either of the two species which have been long known as members of the British mammalian fauna, and which have always been specifically distinct, it must be deemed a variety of M. rattus; but I claim for it distinctive characters separating it from the rat, quite as marked as those which distinguish the brown from the old English black rat. Indeed M. decumanus more nearly resembles M. rattus than does the new rat. It was suggested to me, at the time I exhibited living specimens, that an appeal must be made to the cranial characters of each before the distinctness and the degree of distinctness between the two could be established. The result of this investigation I now give to the Society. [Mr. Salter here figures and differentiates the skulls of the two species.]

P.S.—Since the foregoing was written I have had reason to conclude that the snake rat is certainly the same species, race, or variety, as was first described by Geoffroy St. Hilaire under the name Mus Alexandrinus. But at the same time my further investigations into the subject have convinced me that our knowledge of the rats of Great Britain, or of rats in general, is not so satisfactory or definite as descriptions in works on Natural History would lead us to suppose. Undoubtedly, characteristic specimens of M. rattus, M. decumanus and M. Alexandrinus may be obtained; but there are intermediate forms in endless variety, as one may satisfy himself by an inspection of the cages of a ratcatcher after his visit to the rat-homes about the docks of London. There can be no question that the typical forms enumerated above as three species are constantly being merged and reduced under favouring conditions by interbreeding. The most superficial examination of many specimens will convince any one of this fact. This circumstance was demonstrated some years since at the Zoological Gardens, Regent's Park. Some individuals of Mus Alexandrinus, which had been sent from Alexandria, got loose in the gardens; and for a long time afterwards the keepers frequently caught cross-bred rats, at first half-bred, and afterwards with less and less qualities of the snake-rat, till at length all traces of it disappeared. In the language of horse-breeders, the new "strain of blood" was "bred out" or eliminated, or, more correctly, it was overpowered by the repeated crossing always on the line of the common brown rat. Had the circumstance been reversed, and a few of the Mus decumanus had escaped among a multitude of M. Alexandrinus, the characters of the latter would undoubtedly have prevailed in the end. The capacity for interbreeding appears to be endless and indefinite. There are sorts of rats which will not come within the category of those recognized, or as their intermediate crosses. We have in this country a black rat with a white chest; in the British Museum are two stuffed rats, chestnut coloured with white breasts, which were captured in Cambridgeshire. The distinguished Irish naturalist, Mr. W. Thompson, has described a black rat with a white chest as a new species, under the name of Mus Hibernicus. On the occasion of the reading of my paper on the cranium of the snake-rat, it was suggested by Mr. Lubbock that it might be a "variety" of one of our other rats. Subsequently, in a discussion in the 'Field' newspaper, by which a great deal of interesting information regarding rats was brought out, Mr. Newman put forward the idea that these cosmopolitan rodents are, in their differences, not so many species, but mere "geographical races," and I am much inclined to believe that this is the truth of the matter. Certainly, if interbreeding and a resultant fertile offspring determine the specific identity of varying individuals, there is an end of the question. The different rats *do* interbreed, and their progeny *are* fruitful for any length of time and any number of generations. Rats hold a curious intermediate position between wild and domestic animals. They are not absolutely either, and they are both. They are wild as they are their own masters and roam at will; they approach a domestic condition, inasmuch as they are nearly always associated with man, and are indirectly dependent on him for their food. Rats are cosmopolitan—they inhabit nearly, if not quite, every region where the human race dwells. In violation, or at least not in keeping, with their dentition and organs of primary assimilation, rats are omnivorous: they can live entirely on animal food; they can even resort to the predaceous habits of Carnivora; or they may have the barest vegetable diet for their sole sustenance. Such constitutional capacities and such adaptability of habit afford wonderful conditions for the development of races. Mus Alexandrinus appears to be spreading all over the world; its extreme agility and the ready way in which it accommodates itself to shipboard naturally tend to such a result. Besides the eastern localities where it was first found, according to Blasius, it was observed by Savi in Italy, in 1825, and named by him Mus tectorum; it was found by Pictet near Geneva, in 1841, and described by him under the title of Mus leucogaster; Blasius states that he himself saw it at Antibes, in the South of France, and he repeatedly obtained it from the Alps in South-Eastern France. It has also been taken at Stuttgard; and Rüppell mentions that it has been sent to him from America. In this country it has been known to rat-catchers in the neighbourhood of the docks both of London and Liverpool.—*Journal of the Proceedings of the Linnean Society*, Vol. vi. p. 66.

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C. S. GREGSON having ascertained to-day for the first time that a printed Circular was being distributed amongst Naturalists, purporting to have been sent by him,—in fact, signed "With Mr. Gregson's compliments,"—is particularly anxious to obtain the Envelopes in which such Circulars are enclosed, to enable him to trace out, by the paper, the post-marks or the writing upon them, the Forger who has issued such Circulars, in order that he may proceed criminally against him; and Mr. Gregson will feel under very great obligations to whoever (having received such Circular) will transmit to him the Envelope it was enclosed in.

Address, C. S. Gregson, Stanley, near Liverpool.

March 22, 1862.

TO CLERGYMEN AND OTHERS.—A Trained, Certificated, Master, who is an Entomologist, wants a Village or other School. Sister for Needlework, if required.

H. B., 33, Old Steine, Brighton.

FEN INSECTS.—W. Winter begs to inform the numerous applicants respecting the Collecting Insects, advertised in the 'Zoologist' for March, that the number of Subscribers will not exceed 15 for all Orders, 10 for Lepidoptera and 5 for the other Orders, as he is engaged from 9 a.m. to 4 p.m. A List of all the Subscribers will be sent to each one on the 15th of April, and another with the Number and List of all Insects taken, before the distribution takes place in October. The engagement on his part to begin now and end on the 10th of October, when all the Insects will be sent to the Subscribers.

P.S. The microscopical project (see 'Zoologist' for last November) is abandoned.—W. Winter, *Bressingham, near Diss, March* 25, 1862.

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HANDBOOK of ZOOLOGY. By J. Van Der Hoeven, M.D., &c., Professor of Zoology in the University of Leyden. Translated from the *Second* Dutch *Edition* (with additional References by the *Author*) by the Rev. W. Clark, M.D., F.R.S., &c., late Fellow of Trinity College, and Professor of Anatomy in the University of Cambridge.

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